

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SONY CORP

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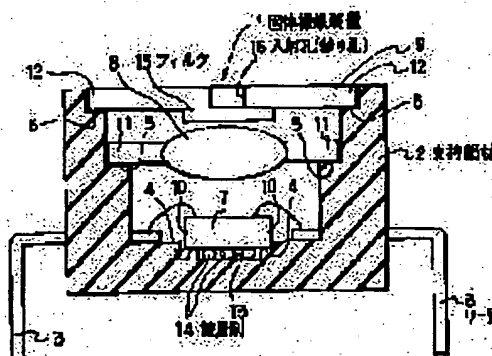
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(54) SOLID STATE IMAGE DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To enable simply ensuring position accuracy in the direction of optical axis and minimize the work in a clean room, by cutting off a solid state image device from the outside by mounting a lens thereon.

SOLUTION: First, in a clean room, a CCD chip 7 and a lens 8 of a solid state image device 1 are mounted on positioning portions 4 and 5 of a supporting member 2, respectively. Next, in a normal environment outside the clean room, an infrared filter 15 is adhered to a diaphragm plate 9, which is then mounted on a diaphragm plate positioning portion 6 of the supporting member 2. Therefore, simply by mounting the solid state image sensing device 7, the lens 8, the filter 15 and the diaphragm plate 9 on the single supporting member 2, the positional relation of these elements may be accurately regulated. Thus, no error is generated in the mounting position by the quantity or type of an adhesive, and a solid state image device having uniform quality with no irregularity may be produced. Also, since the device 1 is cut off from the outside after the lens is mounted, there is no risk of intrusion of dusts.



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CLAIMS

[Claim(s)]

[Claim 1] It is the solid state camera characterized by having the single supporter material which attaches a solid state image sensor, a lens, a filter, and a throttle plate, equipping this supporter material with the positioning section which positions said solid state image sensor, a lens, a filter, and a throttle plate, and said solid state camera being intercepted by attachment of said lens from the external world.

[Claim 2] The positioning section of said solid state image sensor is a solid state camera according to claim 1 characterized by having the adhesives recess of thread portion which misses a part for the overflow of the adhesives which attach said solid state image sensor in said supporter material.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the solid state camera which built the solid state image sensor, the lens, the filter, and the throttle plate into single supporter material in detail about a solid state camera.

[0002]

[Description of the Prior Art] The example of the conventional solid state camera is shown in drawing 6 - drawing 8 . In the solid state camera 100 of drawing 6 , the CCD chip 102 pastes up on a printed circuit board 101, and the lens 103 is attached on it. And the closure case 104 is attached so that these whole may be covered, the image incidence hole (diaphragm hole) 105 drilled there is blockaded with an infrared cut filter 106, and penetration of the dust to the interior is prevented.

[0003] The same is said of the solid state camera 200 of drawing 7 , and the CCD chip 202 has pasted up on the printed circuit board 201, and the lens holder 203 and the lens 204 are attached on it. The IC chip 205 is also attached on the printed circuit board 201. And the transparent closure case 206 is attached so that these whole may be covered, and penetration of the dust to the interior is prevented now.

[0004] The solid state camera 300 of drawing 8 is indicated by JP,61-134187,A, and the CCD chip 303 is being fixed to the inside base of a substrate 301 by adhesives 302.

[0005] The perimeter frame 305 is formed in the substrate 301, the frame 307 is attached in this by adhesives 306, and the image pick-up lens 308 is attached in this frame 307.

[0006] Moreover, the solid state camera which unified the solid state image sensor and the lens is indicated by JP,62-42558,A and JP,5-22640,A.

[0007]

[Problem(s) to be Solved by the Invention] However, there was a difficulty shown below in the above-mentioned conventional technique. The 1st is hard to maintain the location precision of the lens to a solid state image sensor. That is, although it has appeared in the solid state camera 300 shown in drawing 8 most notably, in the case of this solid state camera 300, the CCD chip 303 is being fixed to the inside base of a substrate 301 through adhesives 302, for example. Moreover, the frame 307 is attached in the substrate 301 through adhesives 306, and the image pick-up lens 308 is attached in this frame 307.

[0008] Therefore, it is very difficult to maintain the range accuracy in the meantime by which the distance between the CCD chip 303 and the image pick-up lens 308 changes with adhesives 302 or the amount of 306, and tolerance is made 50 or 100 microns. This point is the same also about what is indicated by JP,5-22640,A.

[0009] The 2nd is that the demand to the dust of a work site is severe. That is, as it is required that dust should not exist in that light-receiving side, the assembly in a clean room is performed for this reason, but the solid state camera has appeared most directly in the example of drawing 7 in this case, in the case of structure like this image pick-up equipment 200, the last closure case 206 is put and that CCD chip 202 is gradually intercepted from the external world.

[0010] That is, the solid state camera of this seed structure needs to do all assembly activities in a clean room. This is very disadvantageous in respect of productivity, facility costs, maintenance, etc.

[0011] The purpose of this invention solves the above-mentioned technical problem, and the location precision of the direction of an optical axis can secure it easily especially, and it is to offer the solid state camera of the structure where the rating in a clean room can moreover be managed with the minimum.

[0012]

[Means for Solving the Problem] For the above-mentioned purpose achievement, by this invention, it has the single supporter material which attaches a solid state image sensor, a lens, a filter, and a throttle plate, and this supporter material is equipped with the positioning section which positions said solid state image sensor, a lens, a filter, and a throttle plate, and said solid state camera is intercepted by attachment of said lens from the external world.

[0013] Single supporter material is used and each part material is uniquely positioned on the basis of this supporter material by attaching a solid state image sensor, a lens, a filter, and a throttle plate in this.

[0014] Moreover, when a solid state image sensor and a lens are attached in this single supporter material, a solid state image sensor is intercepted from the external world. Therefore, an assembly can usually be carried out under the environment of level after that.

[0015]

[Embodiment of the Invention] Hereafter, it explains based on the example of a gestalt of illustration implementation of the detail of this invention. The solid state camera 1 of the example of a gestalt of the 1st operation is shown in drawing 1. In drawing, 2 is supporter material, for example, is created by injection molding made from synthetic resin. In addition, you may be the thing of a ceramic and others, and a material may also delete a process and may be other processes besides appearance *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne.

[0016] Lead 3 is really formed by molding in the case of the above-mentioned injection molding. This also forms in the supporter material 2 the hole which inserts in lead 3, and you may make it attach a lead afterwards.

[0017] The supporter material 2 is equipped with the positioning sections 4-6. The positioning section 4 is used for positioning of the CCD chip 7. The positioning section 5 is used for positioning of a lens 8. The positioning section 6 is used for positioning of a throttle plate 9.

[0018] Each positioning sections 4-6 constitute the shape of a stairway, and the top face achieves the positioning function to the CCD chip 7, a lens 8, and a throttle plate 9. The edges 10-12 of each member are laid here, and the location is decided.

[0019] 13 is an adhesives recess of thread portion. Let the volume be a bigger value than the amount of the adhesives 14 used since the CCD chip 7 is fixed. by this, adhesives 14 do not overflow from the adhesives recess of thread portion 13, and adhesives 14 push up, and it comes out, and is not said that the location of the CCD chip 7 is out of order

[0020] 15 is an infrared filter, and it is attached so that the image incidence hole (diaphragm hole) 16 of a throttle plate may be blockaded.

[0021] The solid state camera 20 of the example of a gestalt of the 2nd operation is shown in drawing 2. The crevice 22 is established in the bottom of the supporter material 21, and the point that the island-like positioning sections 23 and 24 are formed in it is different from the example 100 of a gestalt of the 1st operation. It succeeds in positioning of the CCD chip 7 in these positioning sections 23 and 24. Other parts are the same as that of the example of a gestalt of the 1st operation. The same sign is given to the same part and explanation is omitted.

[0022] How to quote drawing 3 and take out the location precision of the optical-axis rectangular cross direction (horizontal by a diagram) is explained. Drawing 3 is what used as the model the positioning section 5 which lays a lens 8, and is the same about other positioning sections 4 and 6.

[0023] This drawing shows two examples of positioning structure about the optical-axis rectangular cross direction. An arrow head 31 maintains that location precision by regulating the dimension of the wall of the side of the positioning section 5 by showing the example which is going to take out the location precision of the optical-axis rectangular cross direction of a lens 8, and making the distance D1

between the walls of the opposite side agree in the dimension D2 of a lens in this case. An arrow head 32 shows the example which is going to take out the positioning accuracy of the optical-axis rectangular cross direction with tabling of heights and a crevice, in this case, forms the crevice 34 corresponding to the top face of the side of the positioning section in the edge 11 of a locating lug 33 and a lens 8, and maintains the location precision of the optical-axis rectangular cross direction by these tabling.

[0024] In addition, although, as for the precision of the direction of an optical axis, for example, the distance between a CCD chip and a lens etc., a high precision is generally searched for, about the optical-axis rectangular cross direction, it is not it, either. Therefore, the structure illustrated to drawing 3 is what was shown according to if there is need, and is not indispensable because of this invention operation.

[0025] The example of an assembly is shown in drawing 4, and the example of an assembly procedure is shown in drawing 5. Here, the example 1 of a gestalt of the 1st operation shown in drawing 1 is used as a model. In a clean room, the CCD chip 7 and lens 8 of this solid state camera 1 are first attached in each positioning sections 4 and 5 of the supporter material 2 (drawing 5 S1).

[0026] Next, under the environment usual [outside a clean room], the infrared filter 15 is pasted up on a throttle plate 9, and this is attached in the positioning section 6 of the throttle plate of the supporter material 2 (drawing 5 S2). A solid state camera 1 is completed now. In addition, even this may all be performed in a clean room.

[0027] Independently, each IC42, a non-illustrated transistor, resistance, a capacitor, etc. are attached in a printed circuit board 41 under the usual environment (drawing 5 S3). If the previous solid state camera 1 is attached in this printed circuit board 41 and inspection and adjustment are finished, the solid state camera module 43 will be completed (drawing 5 S4).

[0028]

[Effect of the Invention] As explained above, by this invention, it had the single supporter material for attaching a solid state image sensor, a lens, a filter, and a throttle plate, and after forming the positioning section for positioning said solid state image sensor, a lens, a filter, and a throttle plate in this supporter material and attaching said lens in it at least, said solid state camera was intercepted from the external world. [0029] Therefore, such physical relationship is correctly regulated only by attaching these solid state image sensors, a lens, a filter, and a throttle plate in this single supporter material. Thereby, like before, according to the amount of adhesives, and a class, it is lost that an error comes out to the location of installation, and the uniform solid state camera of the quality which is not with a rose can be produced now.

[0030] Moreover, after lens attachment, a solid state camera is intercepted from the external world. Therefore, there is no fear of dust advancing into inside, the process which is this point and must be performed in a clean room is limited, and the assembly of a process and maintenance become easy. The stability of the quality from this field is also expectable.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the solid state camera which built the solid state image sensor, the lens, the filter, and the throttle plate into single supporter material in detail about a solid state camera.

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PRIOR ART

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

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MEANS

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[0015]

[Embodiment of the Invention] Hereafter, it explains based on the example of a gestalt of illustration implementation of the detail of this invention. The solid state camera 1 of the example of a gestalt of the 1st operation is shown in drawing 1. In drawing, 2 is supporter material, for example, is created by injection molding made from synthetic resin. In addition, you may be the thing of a ceramic and others, and a material may also delete a process and may be other processes besides appearance *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne.

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[0018] Each positioning sections 4-6 constitute the shape of a stairway, and the top face achieves the positioning function to the CCD chip 7, a lens 8, and a throttle plate 9. The edges 10-12 of each member are laid here, and the location is decided.

[0019] 13 is an adhesives recess of thread portion. Let the volume be a bigger value than the amount of the adhesives 14 used since the CCD chip 7 is fixed. by this, adhesives 14 do not overflow from the adhesives recess of thread portion 13, and adhesives 14 push up, and it comes out, and is not said that the location of the CCD chip 7 is out of order

[0020] 15 is an infrared filter, and it is attached so that the image incidence hole (diaphragm hole) 16 of a throttle plate may be blockaded.

[0021] The solid state camera 20 of the example of a gestalt of the 2nd operation is shown in drawing 2. The crevice 22 is established in the bottom of the supporter material 21, and the point that the island-like positioning sections 23 and 24 are formed in it is different from the example 100 of a gestalt of the 1st operation. It succeeds in positioning of the CCD chip 7 in these positioning sections 23 and 24. Other parts are the same as that of the example of a gestalt of the 1st operation. The same sign is given to the same part and explanation is omitted.

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[0023] This drawing shows two examples of positioning structure about the optical-axis rectangular cross direction. An arrow head 31 maintains that location precision by regulating the dimension of the wall of the side of the positioning section 5 by showing the example which is going to take out the location precision of the optical-axis rectangular cross direction of a lens 8, and making the distance D1 between the walls of the opposite side agree in the dimension D2 of a lens in this case. An arrow head 32 shows the example which is going to take out the positioning accuracy of the optical-axis rectangular cross direction with tabling of heights and a crevice, in this case, forms the crevice 34 corresponding to the top face of the side of the positioning section in the edge 11 of a locating lug 33 and a lens 8, and maintains the location precision of the optical-axis rectangular cross direction by these tabling.

[0024] In addition, although, as for the precision of the direction of an optical axis, for example, the distance between a CCD chip and a lens etc., a high precision is generally searched for, about the optical-axis rectangular cross direction, it is not it, either. Therefore, the structure illustrated to drawing 3 is what was shown according to if there is need, and is not indispensable because of this invention operation.

[0025] The example of an assembly is shown in drawing 4 , and the example of an assembly procedure is shown in drawing 5 . Here, the example 1 of a gestalt of the 1st operation shown in drawing 1 is used as a model. In a clean room, the CCD chip 7 and lens 8 of this solid state camera 1 are first attached in each positioning sections 4 and 5 of the supporter material 2 (drawing 5 S1).

[0026] Next, under the environment usual [outside a clean room], the infrared filter 15 is pasted up on a throttle plate 9, and this is attached in the positioning section 6 of the throttle plate of the supporter material 2 (drawing 5 S2). A solid state camera 1 is completed now. In addition, even this may all be performed in a clean room.

[0027] Independently, each IC42, a non-illustrated transistor, resistance, a capacitor, etc. are attached in a printed circuit board 41 under the usual environment (drawing 5 S3). If the previous solid state camera 1 is attached in this printed circuit board 41 and inspection and adjustment are finished, the solid state camera module 43 will be completed (drawing 5 S4).

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The sectional view showing the example of a gestalt of the 1st operation.

[Drawing 2] The sectional view showing the example of a gestalt of the 2nd operation.

[Drawing 3] The sectional view showing the example of positioning structure of the optical-axis rectangular cross direction.

[Drawing 4] The decomposition perspective view showing the example of structure of a solid state camera module.

[Drawing 5] The flow chart which shows the example of an assembly procedure of a solid state camera module.

[Drawing 6] The sectional view showing an example of the conventional solid state camera.

[Drawing 7] The sectional view showing an example of the conventional solid state camera.

[Drawing 8] The sectional view showing an example of the conventional solid state camera.

[Description of Notations]

1 ... A solid state camera (example of a gestalt of the 1st operation), 2 ... Supporter material, 3 ... A lead, 4 ... The positioning section (for a CCD chip), 5 ... Positioning section (for lenses), 6 ... The positioning section (for throttle plates), 7 ... A CCD chip, 8 ... Lens, 9 ... A throttle plate, 10 ... The edge of a CCD chip, 11 ... The edge of a lens, 12 ... The edge of a throttle plate, 13 ... An adhesives recess of thread portion, 14 ... Adhesives, 15 ... An infrared filter, 16 ... An image incidence hole (diaphragm hole), 20 ... Solid state camera (example of a gestalt of the 2nd operation), 21 ... Supporter material, 22 ... A crevice (under a CCD chip), 23 ... Island-like positioning section, 24 ... The island-like positioning section, 31 ... (arrow head) Positioning of the optical-axis rectangular cross direction with the dimension of the wall of the side of the positioning section, 32 ... (arrow head) Positioning of the optical-axis rectangular cross direction by tabling of a locating lug and a crevice, 33 [... IC, 43 / ... A solid state camera module, D1 / ... The distance between the walls of the opposite side, D2 / ... Lens dimension] ... A locating lug, 34 ... A corresponding crevice, 41 corresponding ... A printed circuit board, 42

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(71) 出願人 000002185

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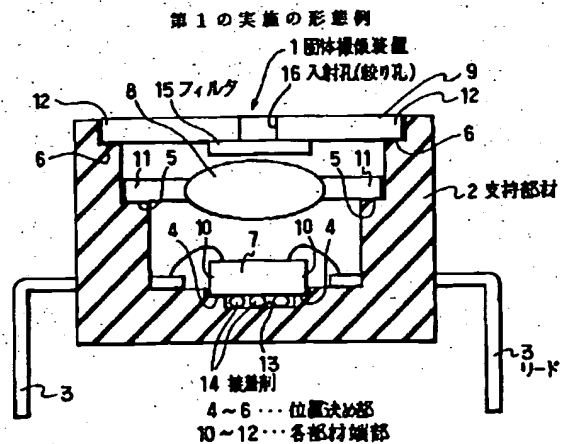
(74) 代理人 弁理士 尾川 秀昭

(54) 【発明の名称】 固体撮像装置

(57) 【要約】

【課題】 特に光軸方向の位置精度が簡単に確保でき、且つクリーンルームでの作業量を最小限に抑えることが出来る固体撮像装置を提供する。

【解決手段】 夫々の為の位置決め部4~6を備えた単一の支持部材2を使用し、これに固体撮像素子7、レンズ8、フィルタ15及び絞り板9を取着。これで支持部材を基準にして各部材の位置決めが為される。また固体撮像素子及びレンズをこの単一の支持部材に取着することのみをクリーンルーム内で行なえば、他の部材については通常環境下で取着可能。



【特許請求の範囲】

【請求項1】 固体撮像素子、レンズ、フィルタ及び絞り板を装着する単一の支持部材を有し、該支持部材は、前記固体撮像素子、レンズ、フィルタ及び絞り板を位置決めする位置決め部を備え、前記レンズの装着により前記固体撮像素子が外界から遮断されることを特徴とする固体撮像装置。

【請求項2】 前記固体撮像素子の位置決め部は、前記固体撮像素子を前記支持部材に装着する接着剤の溢れ分を逃がす接着剤逃がし部を有することを特徴とする請求項1記載の固体撮像装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は固体撮像装置に関し、詳しくは固体撮像素子、レンズ、フィルタ及び絞り板を単一の支持部材に組み込んだ固体撮像装置に関する。

【0002】

【従来の技術】図6～図8に従来の固体撮像装置の例を示す。図6の固体撮像装置100では、プリント基板101上にCCDチップ102が接着され、その上にレンズ103が装着されている。そしてこれら全体を覆うように封止ケース104が装着され、そこに穿設された画像入射孔（絞り孔）105は、赤外線カットフィルター106で閉塞され、内部への塵埃の進入が阻止されている。

【0003】図7の固体撮像装置200も同様で、プリント基板201上にCCDチップ202が接着されており、その上にレンズホルダー203及びレンズ204が装着されている。プリント基板201上にはICチップ205も装着されている。そしてこれら全体を覆うように透明な封止ケース206が装着され、これで内部への塵埃の進入が阻止されている。

【0004】図8の固体撮像装置300は特開昭61-134187に開示されているもので、基板301の内側底面に接着剤302によりCCDチップ303が固定されている。

【0005】基板301には周囲枠305が設けられていて、これに接着剤306によりフレーム307が装着されており、このフレーム307に撮像レンズ308が装着されている。

【0006】また特開昭62-42558号公報、特開平5-22640号公報には、固体撮像素子とレンズとを一体化した固体撮像装置が開示されている。

【0007】

【発明が解決しようとする課題】しかし上記従来技術には、以下に示す難点があった。第1は、固体撮像素子に対するレンズの位置精度が保ちにくいことである。即ち図8に示される固体撮像装置300に一番顕著に現れているが、例えばこの固体撮像装置300の場合、CCD

チップ303は、接着剤302を介して基板301の内側底面に固定されている。またフレーム307は接着剤306を介して基板301に装着されており、このフレーム307に撮像レンズ308が取り付けられている。

【0008】従って、接着剤302或いは306の多寡によりCCDチップ303と撮像レンズ308との間の距離は変化するものであり、許容範囲が50或いは100ミクロンとされるこの間の距離精度を保つのは非常に難しい。この点は特開平5-22640号公報に開示されているものについても同様である。

【0009】第2は、作業現場の塵埃に対する要求が厳しいことである。即ち固体撮像装置はその受光面に塵埃が存在しないことが要求され、この為、クリーンルームでの組み立てが行なわれるが、この場合、図7の例に最も端的に現れているように、例えばこの撮像装置200のような構造の場合、最後の封止ケース206が被せられて漸くそのCCDチップ202が外界から遮断される。

【0010】即ちこの種構造の固体撮像装置は、全ての組み立て作業をクリーンルーム内で行なう必要がある。これは、生産性、設備費用、保守等の面で非常に不利である。

【0011】本発明の目的は、上記課題を解決し、特に光軸方向の位置精度が簡単に確保でき、しかもクリーンルームでの作業量が最小限で済む構造の固体撮像装置を提供することにある。

【0012】

【課題を解決するための手段】上記目的達成のため本発明では、固体撮像素子、レンズ、フィルタ及び絞り板を装着する単一の支持部材を有し、該支持部材は、前記固体撮像素子、レンズ、フィルタ及び絞り板を位置決めする位置決め部を備え、前記レンズの装着により前記固体撮像装置が外界から遮断される。

【0013】単一の支持部材を使用し、これに固体撮像素子、レンズ、フィルタ及び絞り板を装着することで、各部材は、この支持部材を基準にして一義的に位置決めされる。

【0014】またこの単一の支持部材に固体撮像素子及びレンズを装着した時点で、固体撮像素子は外界から遮断される。従ってその後は通常レベルの環境下で組み立てが実施出来る。

【0015】

【発明の実施の形態】以下、本発明の詳細を図示実施の形態例に基いて説明する。図1に第1の実施の形態例の固体撮像装置1を示す。図に於て、2は支持部材であり、例えば合成樹脂を素材とした射出成型で作成される。なお素材はセラミックその他のものであっても良く、製法も削り出しその他ほかの製法であっても良い。

【0016】リード3は上記射出成型の際に一体成型で形成される。これも例えばリード3を挿通する穴を支持

部材2に形成しておき、後からリードを組み付けるようにしても良い。

【0017】支持部材2は位置決め部4～6を備えている。位置決め部4はCCDチップ7の位置決め使用される。位置決め部5はレンズ8の位置決め使用される。位置決め部6は絞り板9の位置決め使用される。

【0018】各位置決め部4～6は階段状を成し、その上面がCCDチップ7、レンズ8及び絞り板9に対する位置決め機能を果たす。ここに夫々の部材の端部10～12が載置され、その位置が決まる。

【0019】13は接着剤逃がし部である。その容積はCCDチップ7を固定する為に使用される接着剤14の量より大きな値とされている。これにより、接着剤14が接着剤逃がし部13から溢れることは無く、接着剤14の押し上げてCCDチップ7の位置が狂うということはない。

【0020】15は赤外線フィルタで、絞り板の画像入射孔(絞り孔)16を閉塞するように取付される。

【0021】第2の実施の形態例の固体撮像装置20を図2に示す。支持部材21の底に凹部22が設けられており、その中に島状の位置決め部23、24が設けられている点が第1の実施の形態例100と相違する。この位置決め部23、24でCCDチップ7の位置決めが為される。他の部分は第1の実施の形態例と同様である。同様の部分には同じ符号を付し、説明を略す。

【0022】図3を引用して光軸直交方向(図では水平方向)の位置精度の出し方を説明する。図3はレンズ8を載置する位置決め部5をモデルにしたもので、他の位置決め部4、6についても同様である。

【0023】この図では、光軸直交方向に関し、二つの位置決め構造例を示している。矢印31は、位置決め部5の脇の壁の寸法を規制することによってレンズ8の光軸直交方向の位置精度を出そうとする例を示し、この場合は、反対側の壁との間の距離D1をレンズの外寸法D2に合致させることにより、その位置精度を保つ。矢印32は、凸部と凹部の噛み合わせで光軸直交方向の位置決め精度を出そうとする例を示し、この場合は、位置決め部の脇の上面に位置決め突起33、レンズ8の端部11には対応した凹部34を形成し、これらの噛み合わせで光軸直交方向の位置精度を保つ。

【0024】なお光軸方向の精度、例えばCCDチップとレンズとの間の距離などは、一般に高い精度が求められるが、光軸直交方向についてはそれほどでもない。従って図3に例示した構造は必要があればということを示したもので、本発明実施のため必須のものではない。

【0025】組み立て例を図4に、組み立て手順の例を図5に示す。ここでは図1に示した第1の実施の形態例1をモデルにする。先ずクリーンルームで、この固体撮像装置1のCCDチップ7とレンズ8を支持部材2の各位置決め部4、5に取り付ける(図5S1)。

【0026】次にクリーンルーム外の通常的环境下で、絞り板9に赤外線フィルタ15を接着し、これを支持部材2の絞り板の位置決め部6に取り付ける(図5S2)。これで固体撮像装置1が完成する。なおここまですべてを全部クリーンルームで実行しても構わない。

【0027】別に、通常的环境下で、プリント基板41に各IC42や、不図示トランジスタ、抵抗、コンデンサ等を取り付ける(図5S3)。このプリント基板41に先の固体撮像装置1を取り付け、検査、調整を終れば、固体撮像装置モジュール43が完成する(図5S4)。

【0028】

【発明の効果】以上説明したように、本発明では固体撮像素子、レンズ、フィルタ及び絞り板を取着する為の単一の支持部材を備え、この支持部材に、前記固体撮像素子、レンズ、フィルタ及び絞り板を位置決めする為の位置決め部を形成し、少なくとも前記レンズが取着された以後は、前記固体撮像装置は外界から遮断されるようにした。

【0029】従ってこれら固体撮像素子、レンズ、フィルタ及び絞り板を単にこの単一の支持部材に取着するだけで、これらの位置関係は正確に規制される。これにより、従来のように、接着剤の量、種類によって、取り付けの位置に誤差が出るというようなことは無くなり、バラツキの無い品質の均一な固体撮像装置が生産できるようになる。

【0030】またレンズ取付後は、固体撮像装置が外界から遮断される。従って中に塵埃が進入する心配はなく、この点で、クリーンルームで実行しなければならない工程は限定され、工程の組み立て、維持が容易になる。この面からの品質の安定も期待できる。

【図面の簡単な説明】

【図1】第1の実施の形態例を示す断面図。

【図2】第2の実施の形態例を示す断面図。

【図3】光軸直交方向の位置決め構造例を示す断面図。

【図4】固体撮像装置モジュールの構造例を示す分解斜視図。

【図5】固体撮像装置モジュールの組み立て手順例を示すフローチャート。

【図6】従来の固体撮像装置の一例を示す断面図。

【図7】従来の固体撮像装置の一例を示す断面図。

【図8】従来の固体撮像装置の一例を示す断面図。

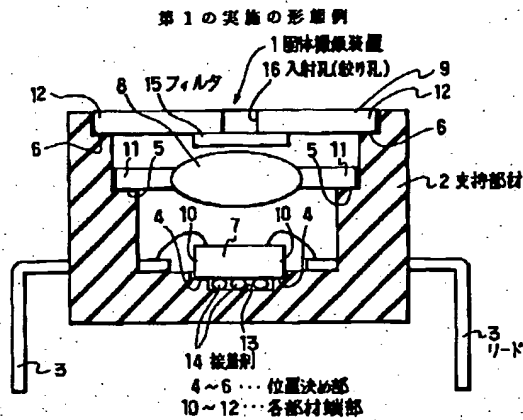
【符号の説明】

1・・・固体撮像装置(第1の実施の形態例)、2・・・支持部材、3・・・リード、4・・・位置決め部(CCDチップ用)、5・・・位置決め部(レンズ用)、6・・・位置決め部(絞り板用)、7・・・CCDチップ、8・・・レンズ、9・・・絞り板、10・・・CCDチップの端部、11・・・レンズの端部、12・・・絞り板の端部、13・・・接着剤逃がし部、14・・・

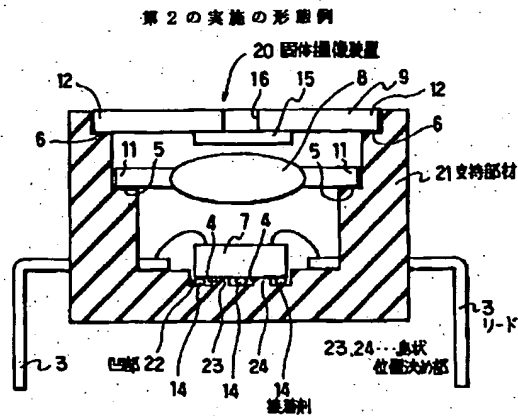
接着剤、15・・・赤外線フィルタ、16・・・画像入射孔（絞り孔）、20・・・固体撮像装置（第2の実施の形態例）、21・・・支持部材、22・・・凹部（C Dチップの下）、23・・・島状位置決め部、24・・・島状位置決め部、31・・・（矢印）位置決め部の脇の壁の寸法による光軸直交方向の位置決め、32・・・

（矢印）位置決め突起と凹部の噛み合わせによる光軸直交方向の位置決め、33・・・位置決め突起、34・・・対応する凹部、41・・・プリント基板、42・・・IC、43・・・固体撮像装置モジュール、D1・・・反対側の壁との間の距離、D2・・・レンズ外形寸法

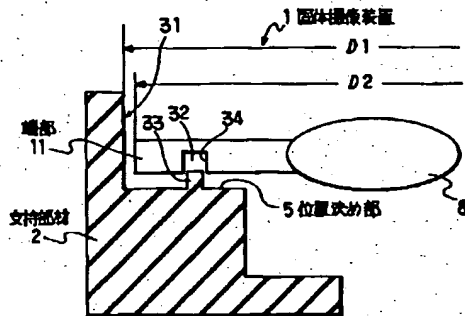
【図1】



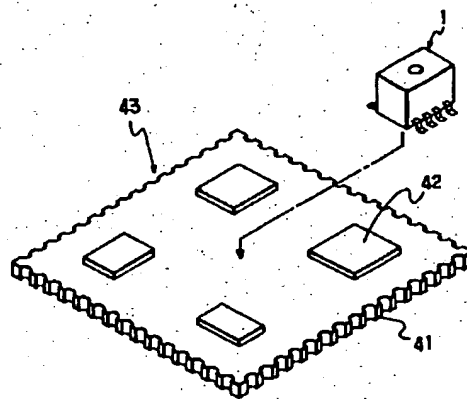
【図2】



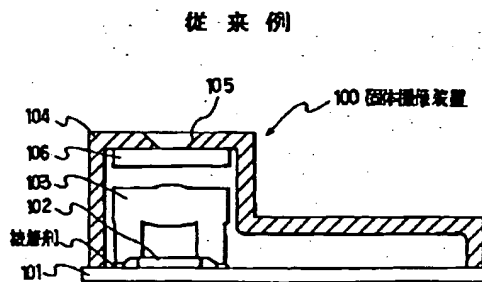
【図3】



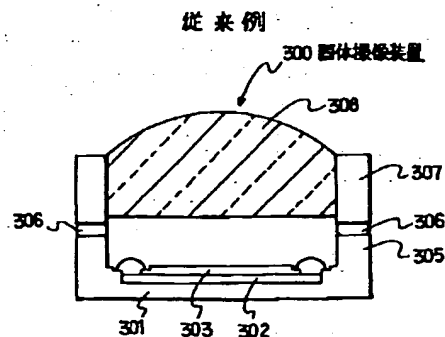
【図4】



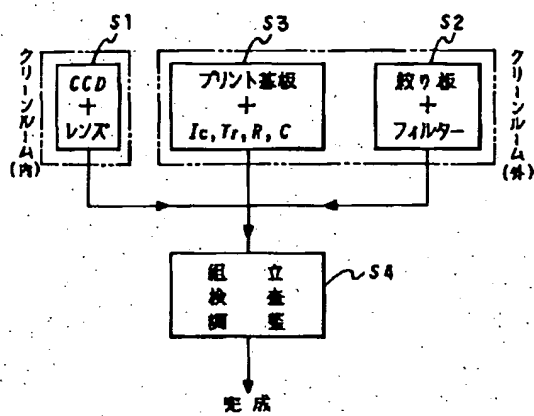
【図6】



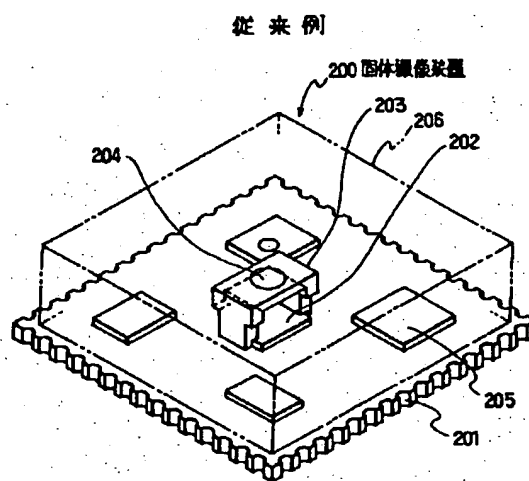
【図8】



【図5】



【図7】



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